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(71) Applicant
Michael John Moore,
78 Hyslop Street, Airdrie ML6, Scotland

(72) Inventor
Michael John Moore

(74) Agent and/or Address for Service
Fitzpatricks, 4 West Regent Street, Glasgow G2 1RS

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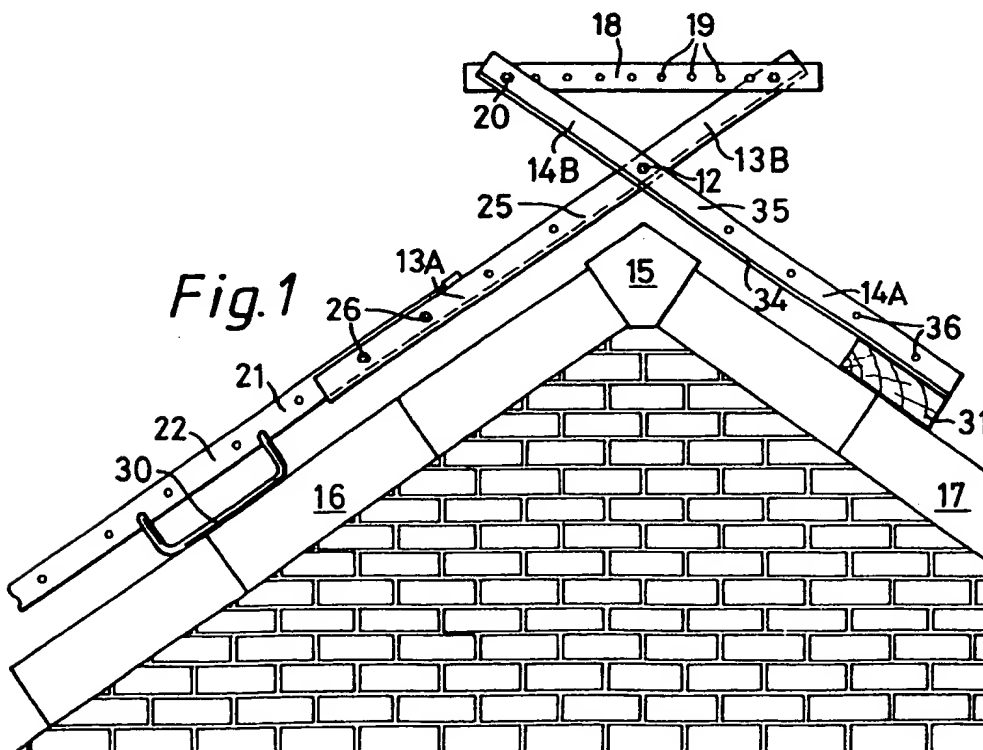
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GB 0337587
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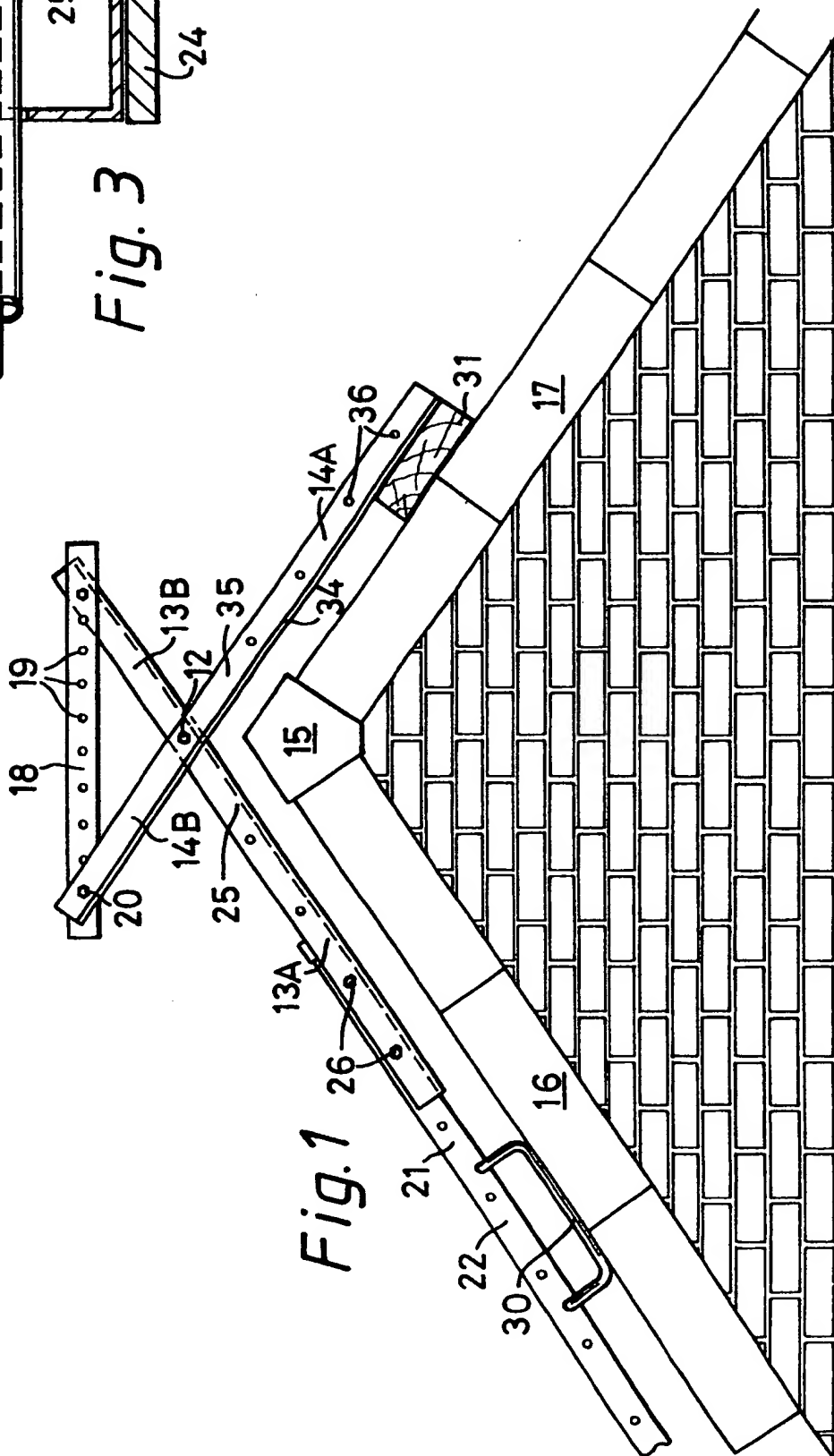
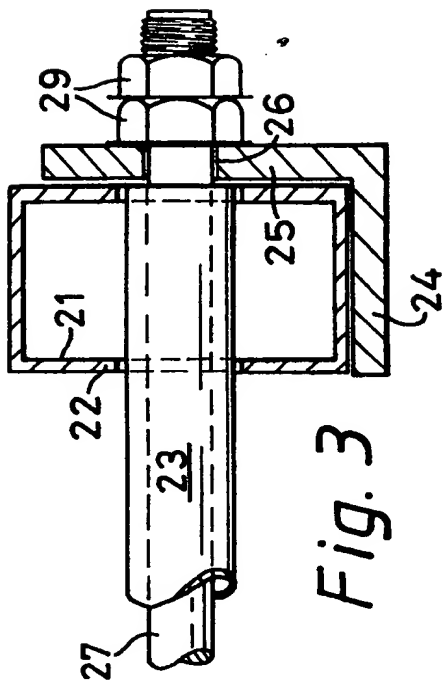
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E1S
Selected US specifications from IPC sub-class E06C

(54) Roof supported frame for ladders

(57) A roof supported frame for ladders has two cross-shaped side members 10, 11. These are laterally spaced, substantially parallel and interconnected by a common rod 12. The cross-shaped members 10, 11 straddle a roof ridge 15 and have limb portions 13A, 14A which extend downwards over each side 16, 17 of the roof and limb portions 13B, 14B which diverge upwardly. A tie bar 18 connects these upwardly divergent limbs 13B, 14B once the limbs 13, 14 are in their proper angle of divergence on the roof. The depending limbs on one or both sides of the roof, i.e. limbs 13A, 13A or 14A, 14A, or both sets of limbs can be attached to the stiles 21 of a ladder 22. Alternatively, the limbs 13 or 14 can be replaced by a ladder 22 to the stiles of which the other limbs 14 or 13 and tie bars 18 are directly attached.



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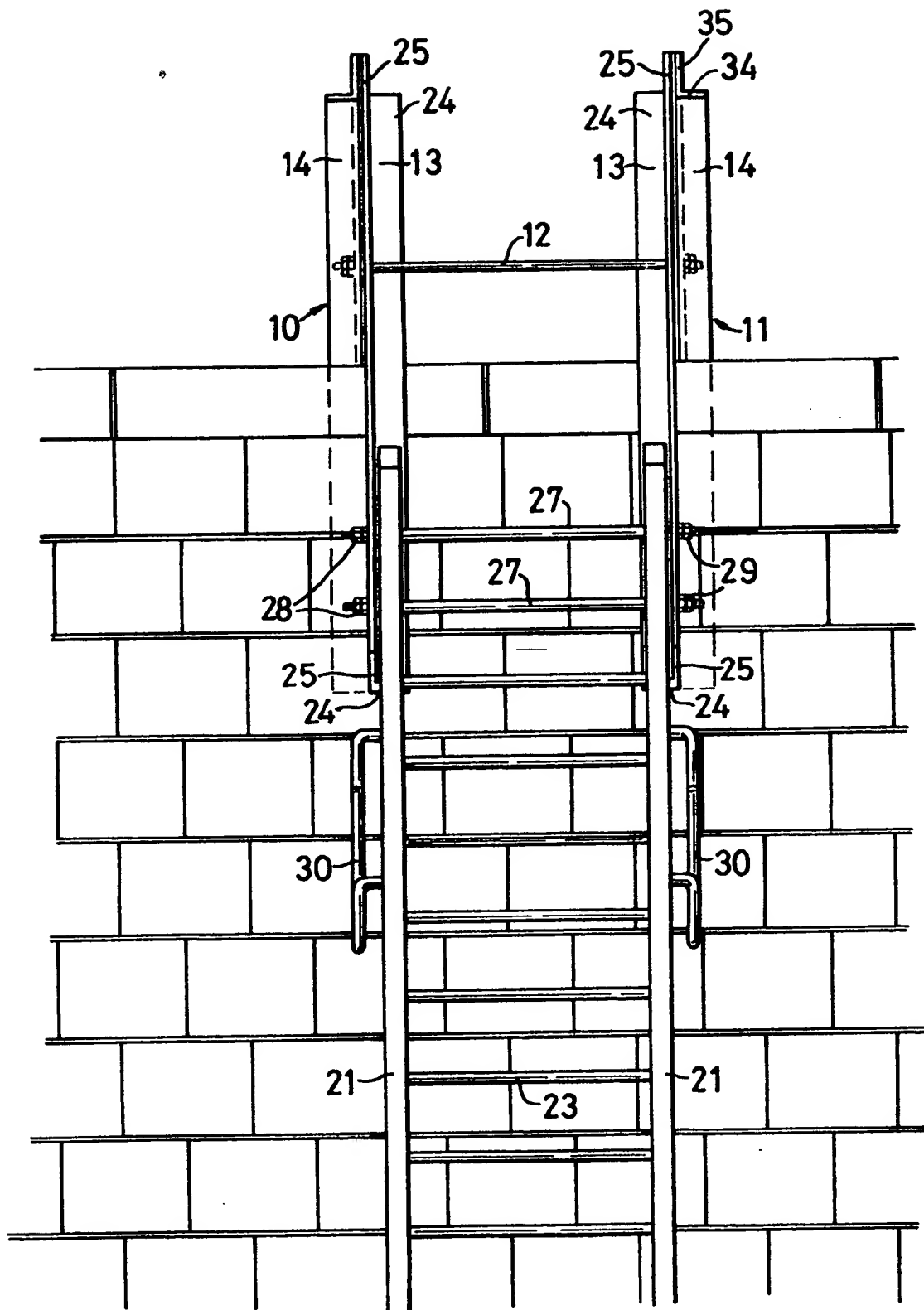


Fig. 2

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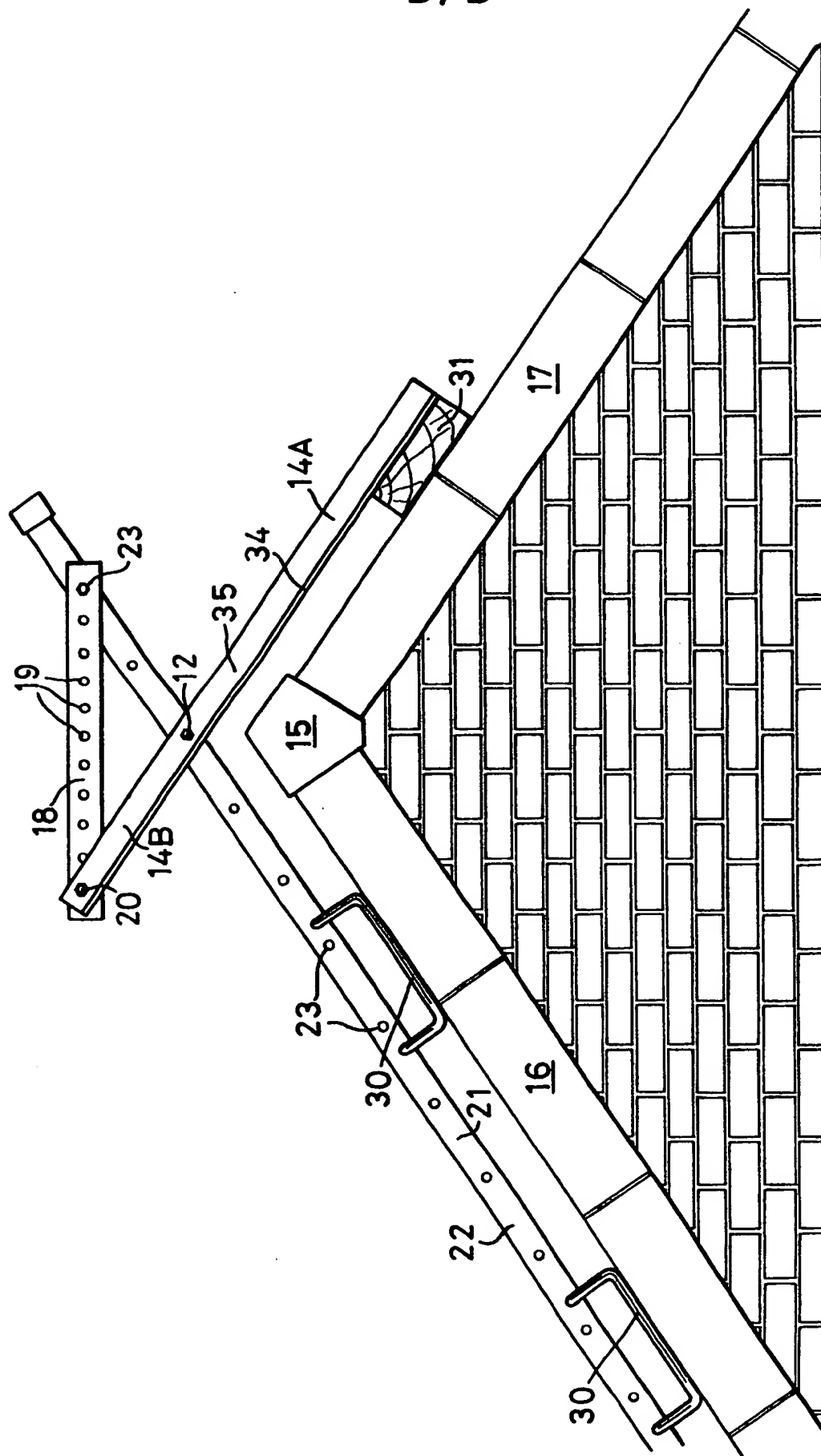


Fig. 4

SPECIFICATION

Roof supported frame for ladders

The invention relates to a frame, adapted to be supported by a roof, for attachment of roof ladders.

At present roof ladders are provided with hooks at one end intended to hook over the ridge tiles of a roof in order to support the ladder on the roof. The hooks are bolted to the ladder stiles and can be removed or mounted as desired. A disadvantage of such hooks is their reliance on stable roof ridge tiles which, if unstable can make the use of hooks dangerous.

An object of this invention is to obviate or mitigate the aforementioned disadvantage.

According to the present invention there is provided a roof supported frame for ladders, said frame comprising two laterally spaced substantially parallel interconnected cross-shaped side members adapted to straddle a roof ridge to extend downwards over each side of the roof, the downwardly extending portions on at least one side being, or being adapted for connection to, a ladder laid on that side of the roof.

Preferably, each cross-shaped side member comprises a pair of elongate limbs pivotally connected together so that the angle of divergence from the pivot is variable to accommodate roofs of different pitch, and a tie bar on the upwardly diverging portion of the limbs for adjustable connection the limbs to tie the side member in the chosen angle of divergence.

Preferably also, the side members are interconnected by a common rod about which each pair of limbs is pivotal.

Preferably also, the pair of limbs are pivotally connected at a location closer to one end (the upper end in use).

Embodiments of the present invention will now be described by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a side elevation of a roof-supported frame and attached ladder according to the invention;

Fig. 2 is a front elevation;

Fig. 3 is a detail of one part of the frame; and

Fig. 4 is a side elevation of a second embodiment.

Referring firstly to Figs. 1 to 3 of the drawings, the frame comprises two laterally spaced substantially parallel cross-shaped side members 10, 11, interconnected by a rod 12.

Each side member comprises two elongate limbs 13, 14 which cross at a location closer to one end (the upper end in use) than the other and are pivotally connected at the crossing by the rod 12.

Limbs 13 and 14 may be flat upright bars but are preferably of angle iron for strength, with the base flanges (24) of the limbs 13 extending inwardly and those (34) of limbs 14 projecting outwardly so that the upright flanges of the pair of limbs 13, 14 of each side member are back-to-back. The intersection and pivot point of each side member is such that two thirds of the limbs are below the pivot so as to give a stable frame in use. Thus, each side member has a relatively long pair of downwardly diverging limbs

the two limbs 13A on one side 16 of the roof and the limbs 14A on the other side 17 of the roof. The angle of divergence is adjustable to accommodate roofs of different pitch and a tie bar 18 is adjustably

connected to the relatively short limbs 13B, 14B which diverge upwardly from the pivot so as to secure the frame member rigid in the desired angle of divergence. The tie bar 18 can be pivotally secured to one of the limbs 13b and adjustably detachably connected to the other 14B via a series of apertures 19, one of which registers with an aperture (not shown) in the limb and receives a lock pin 20 therethrough. The lower ends of the two limbs on at least one side of the roof, in this embodiment, limbs 13A, are designed to engage the upper ends of the stiles 21 of a ladder 22 which is preferably an aluminium ladder with hollow rungs 23, this being the usual type of ladder used on roofs. As best shown in Fig. 3 the limb 13A of side member 10 is an angle bracket having a base flange 24 which overlies the roof inwardly of side flange 25. The stile 21 overlies the base 24 and a hollow rung 23 aligns with an aperture 26 in each flange 25 so that a connecting rod 27 can be located through the flanges and the rung. The rod has a head 28 at one end and a thread at the other end to receive double lock nuts 29. There are preferably a number of apertures 26 in each flange so that the ladder can be selectively connected to the frame through two rungs as illustrated in Figs. 1 and 2.

As is customary with roof ladders, friction pads 30, such as rubber blocks, are located on the underside of the ladder. These blocks are normally provided only at the lower end of the ladder but in order to keep the ladder parallel to the roof, additional blocks 30 are provided at the upper end of the ladder. The other limbs 14A of the frame also have similar friction pads 30 so that the limbs 13A, 14A stand slightly above the roof.

If a wooden ladder is provided, holes must be drilled in the stiles so that the connector 27 can pass through aligned apertures in the limbs 13A and the stiles (but not through the rungs); alternatively, a bolt can connect each adjacent of limb 13A and stile.

The frame may be designed to engage only one ladder 22, with limbs 14A giving only stability, but limbs 14A may also be adapted to engage a second ladder 22 (not shown).

Limbs 14 have their base flanges 34 extending outwardly and the upright flanges 35 may have a series of apertures 36 along limbs 14A so that the second ladder 22 can be attached thereto between the upright flanges 35 with two connecting rods 27 passed through co-axial apertures 36, ladder stiles 21 and hollow rung 23. If necessary a spacer (not shown) can be located between the ladder stile and adjacent flange 35 to fill the gap caused by the additional width between flanges 35 relative to that between flanges 25 of limbs 13A.

As the ladder has friction pads 30 it need not overlie the base flange 34 of the angle bracket. In a second embodiment, the ladder 22 is directly connected to the limbs 14, thus omitting the limbs 13, and the tie bars 18 are each connected to the

of the ladder, preferably through the aperture 19 in the tie bar co-axial with the uppermost rung 23.

In this embodiment, each ladder stile 21 constitutes one limb of each pair of laterally spaced cross shaped side members.

When not in use, the limbs 13, 14 of each side member can be folded to a very narrow X shape (as the blocks 30 will prevent complete closure) and the frame can be easily carried.

The width of the frame can be adjusted (by adjustment of the double lock nuts) to accommodate ladders of different width.

CLAIMS

1. A roof supported frame for ladders, said frame comprising two laterally spaced substantially parallel interconnected cross-shaped side members adapted to straddle a roof ridge to extend downwards over each side of the roof, the downwardly extending portions on at least one side being, or being adapted for connection to, a ladder laid on that side of the roof.

2. A frame as claimed in claim 1, in which each cross-shaped side member comprises a pair of elongate limbs pivotally connected together so that the angle of divergence from the pivot is variable to accommodate roofs of different pitch, and a tie bar on the upwardly diverging portion of the limbs for

adjustable connection to the limbs to tie the side member in the chosen angle of divergence.

3. A frame as claimed in claim 2, in which the side members are interconnected by a common rod about which each pair of limbs is pivotal.

4. A frame as claimed in any one of claims 1 to 3, in which the pair of limbs are pivotally connected at a location closer to one end (the upper end in use).

5. A frame as claimed in any one of claims 1 to 4, in which the limbs of each cross-shaped side member have co-operating through apertures for pivotal connection to each other and at least one of said limbs has a plurality of through apertures by which the said limb is connectable to a ladder stile.

6. A frame as claimed in any one of claims 2 to 4, in which the limbs of each side member are of angle section, with transverse flanges extending in opposite directions and the upright flanges back-to-back.

7. A frame as claimed in claim 6 in which the through apertures are in the upright flanges.

8. A roof supported frame for ladders substantially as hereinbefore described with reference to Figs. 1 to 3.

9. A roof support frame for ladders substantially as hereinbefore described with reference to Figs. 1 to 3 when modified with reference to Fig. 4.